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NASA TECHNOLOGY TRACKS CONSEQUENCES OF HURRICANE FLOYD

A NASA oceanographer, using spaceborne technologies to study the effects of Hurricane Floyd, has seen indications that there may be significant impacts on the marine food chain along the North Carolina coast due to extensive rainfall in the region.

"Following Hurricane Floyd, record-breaking rains continued to soak the area, washing mountains of sediment and waste into the water system. Now rivers and tributaries along the Atlantic are choked and major ecological changes are happening," said Gene Feldman, of NASA's Goddard Space Flight Center, Greenbelt, MD.

"Periodically, levels of dissolved oxygen in the water have dropped dramatically as organic matter decomposes, and aquatic life has been threatened in dozens of estuaries and peripheral habitats, commonly referred to as 'dead zones.' The current changes in the area may have lasting repercussions for hundreds of thousands of people," he said.

Scientists are studying Hurricane Floyd's effect on algae blooms and phytoplankton, important links in the regional marine food chain. Their data also will help them understand how the hurricane's aftermath may affect the fragile environment in the coming months.

Using data from NASA's Earth-orbiting Sea-viewing Wide Field-of-view Sensor (SeaWiFS) and an airborne laser instrument, scientists from two National Oceanic and Atmospheric Administration (NOAA) centers can monitor algae growth over large regions, including Pamlico Sound between the North Carolina mainland and the Outer Banks.

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According to Pat Tester, a NOAA scientist at the Center for Coastal Fisheries and Habitat Research, Beaufort, NC, fertilizer and other nutrients that flowed down the storm flooded rivers in eastern North Carolina are feeding the algae or phytoplankton in the sounds.

"One question is what happens to the aquatic activity in the sounds when this algae dies and begins to starve the waters of oxygen," Tester said. "The long-term observations provided by the NASA technology will help us monitor the phytoplankton in the water.

"The NASA technology improves our ability to monitor these important fishery areas by covering larger areas than direct sampling from boats can, and by providing this information for weeks or months."

Tester's team is coordinating sampling missions from small boats on the waterways with flights by a NOAA Twin-Otter aircraft carrying the NASA laser and observations from the SeaWiFS spacecraft. "This approach is providing a three-tier look at the area from space, air and sea," she said.

The laser system, the Airborne Oceanographic Lidar from Goddard's Wallops Flight Facility, Wallops Island, VA, transmits a green light pulse into the water, where the light is absorbed by the phytoplankton. A receiver on the aircraft detects the green light reflected from the water's surface and red light that is emitted by the chlorophyll pigment in the algae.

The SeaWiFS instrument measures changes in water color that indicate where concentrations of phytoplankton are located.

NOAA's Coastal Services Center, Charleston, SC, is also taking part in the research.

Satellite images of eastern North Carolina following Hurricane Floyd are available at the following web address.

<http://svs.gsfc.nasa.gov/imagewall/carolina.html>

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